Invasive Species Detection Year End Report

Submitted by:
Timothy S. Prather,
Assistant Professor/Extension Specialist,
Department of Plant, Soil and Entomological Sciences,
College of Agricultural and Life Sciences, University of Idaho

Introduction

The invasive plant research and extension program at the University of Idaho is operated under the direction of Timothy S. Prather. He directs an extension and research program that includes the Erickson Weed Diagnostic Laboratory and an early detection remote sensing Laboratory. Staffing the laboratory is a plant taxonomist Sandra Robins who has a M.S. degree in Range Ecology and Management at the University of Idaho. The remote sensing laboratory is staffed by Dr. Lawrence Lass who has extensive experience in GPS/GIS applications and remote sensing.

The program staff work to support Idaho's Strategic Plan for Noxious Weeds that includes: "*Early detection of newly arrived noxious weeds is a critical element of integrated weed management. Application of early detection programs has been little used across the state.*" One action item was to create a rapid response system to deal with new invaders. Through this project we established a pilot rapid response detection survey team that worked with CWMA's on eradication projects. In addition, through submissions for identification to our diagnostic lab we routinely find exotic species new to the state. Another action item of the strategic plan was to develop a communication process to facilitate early detection and eradication. We worked with the Clearwater Basin and Salmon River CWMA's to survey for weeds slated for eradication.

Summary of Activities

The activities undertaken fit within the prevention, mapping/inventory, and eradication areas. An eradication mapping system was assembled for in-field mapping of infestations. The mapping system consisted of a GPS linked to a Compaq Ipaq. The Ipaq contained digital orthophoto quads if available or 7.5 minute contour maps as a background running ArcPad GPS mapping software. Infestations were mapped as points or polygons depending on infestation size using categories compatible with USFS data requirements and with developing mapping standards for invasive plant species. Current GPS location is visible on the map or digital photo and data entry is via a menu system. The software saves data in a shapefile that allows movement of data into desktop mapping software in a standard format that can then be shared with CWMA cooperators. The total cost is approximately $1200 for each mapping system. Majority of surveys were accomplished with a four-person crew. Depending on the situation, the crew either walked swaths of the survey area (separated based on visibility and size of the weed), or in case of a road survey, the crew split in two teams of two, each covering a specific distance of roadside.

Surveys:

We received a report from Rich Old at WSU of *Ballota nigra* in Lewis County. The area was surveyed and two locations containing this species was found. This species is new to the PNW and it is considered a weed. Additional survey will be conducted next year as we work with our CWMA partners.

We also received a report from Leonard Lake of USFS that *Hypericum maculatum* had been found in the Panhandle National Forest. Our crew worked with forest botanists and mapped the location of this new invader. We will survey again next year and work with USFS on removal strategy of this species that looks very similar to St. John's wort.

The survey crew surveyed a portion of BLM land northwest of Goodrich, to map the spread of yellow starthistle. The survey was successful in finding the extent of yellow starthistle, along with finding some outlying plants. A total of 214 acres were surveyed and 4 total acres of yellow starthistle were found.

Highway 12 was surveyed for solitary patches of leafy spurge, which might have been carried into Idaho from Montana via trucks or people transporting horses. The survey extended from Three Rivers, all the way to the Montana border. Two patches of leafy spurge were found in 2001. In 2003 no plants were found. The Hwy 12 corridor will continue to be monitored for leafy spurge to ensure no plants remain from the two infestations. Should we find no plants again in 2004, we likely will have successfully eradicated leafy spurge from the 1,000 square mile Lochsa drainage. A total of 25,859 acres were surveyed along roads and parking access areas as well as campgrounds.

Major sections of the Lewis and Clark trail along the Lolo motorway were inventoried for weeds in preparation of the bicentennial celebration. A total of 657 acres were surveyed and 1 acre of weeds were found. Within that one acre total, the species present included: black henbane, meadow hawkweed, orange hawkweed, spotted knapweed and St. John's wort.

Matgrass was surveyed to map the extent of matgrass near Florence in the Nez Perce National Forest. The survey found the majority of matgrass on the east end of the meadow, sporadically extending into the forest on animal trails. A total of 150 acres were surveyed and 2.8 acres of matgrass were found.

The survey team worked with Latah County tracking two sites of Russian knapweed and a plumeless thistle site near Moscow Mountain. The two Russian knapweed sites were mapped and followed up after an herbicide treatment. A total of 10 acres were surveyed and 0.14 acreas of Russian knapweed were found. The plumeless thistle site was mapped. The Russian knapweed was a new county record for Latah County.

Leafy spurge was surveyed along the Owyhee River in Owyhee County, starting at the Idaho state border, just outside of Jordan Valley. The purpose of the survey was to map existing populations of leafy spurge. The extent of the leafy spurge was determined in

2003 after building on survey accomplished in 2002. A total of 400 acres was surveyed in 2003 with 5 acres of leafy spurge found.

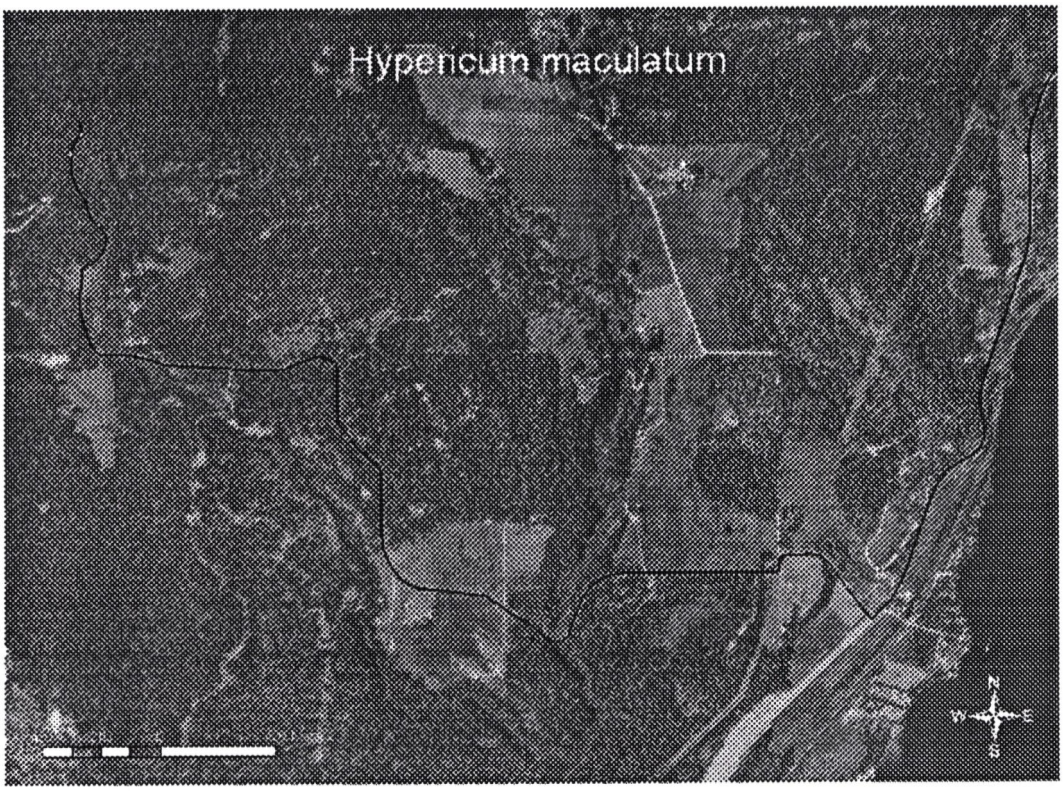
The weed crew surveyed three areas for yellow and orange hawkweed in the Nez Perce National Forest. Previous infestations were surveyed from GPS points. Yellow hawkweed was found at only one location, near China Point. This infestation ran along a roadside for about 25 meters. The area surrounding the infestation was surveyed at ¼ to ½ mile radius. The two other survey locations had populations only of native hawkweeds. Hawkweed populations have decreased dramatically with continued monitoring and treatment in this joint effort between the Salmon River CWMA and UI. A total of 51 acres were surveyed and the infestation is now only 0.22 acres. A second area to the south of Grangeville at Slate Creek was surveyed for Orange hawkweed and only 0.003 acres were found.

The survey crew was sent to survey for dyer's woad in the Frank Church-River of No Return Wilderness. The team searched for pockets of dyer's woad along the Salmon River. A total of 68 acres were surveyed and 0.64 acres of Dyers woad were found.

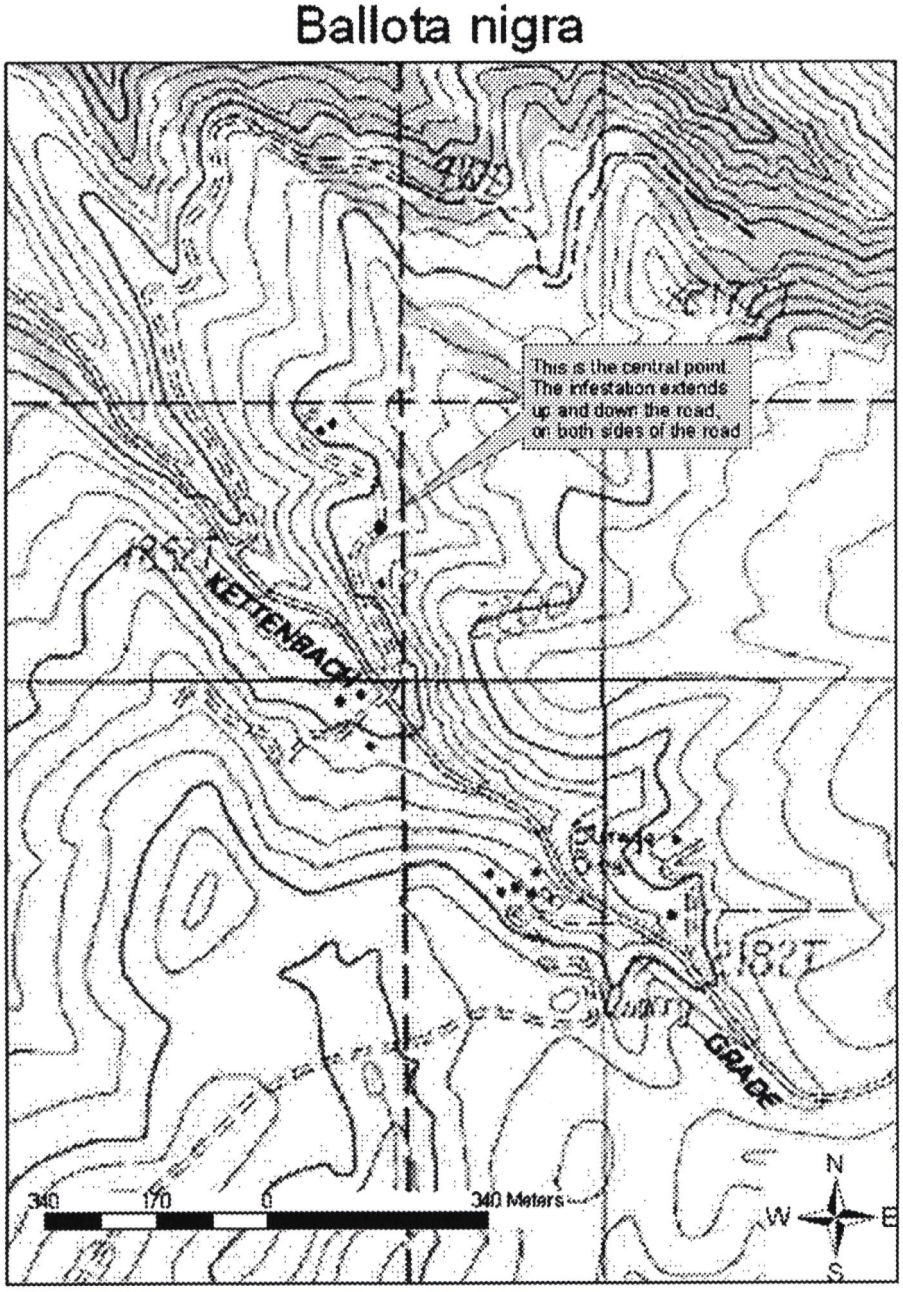
Highlights:

Highlights include:

1) We have nearly eradicated leafy spurge from the Lochsa Drainage.
2) We have worked with the Salmon River CWMA in eradication projects. Hawkweed infestations have dropped from 0.61 to 0.21 for meadow hawkweed and from 0.065 to 0.011 for orange hawkweed over three years.
3) Two new species that warrant eradication have been found on less than a total of 5 acres for both species, *Ballota nigra* and *Hypericum maculatum*.



Locations of *Hypericum maculatum* are designated by yellow points along the route taken into the area infested. The area is near Sandpoint Idaho.



Location of *Ballota nigra* near Ruebens Idaho.

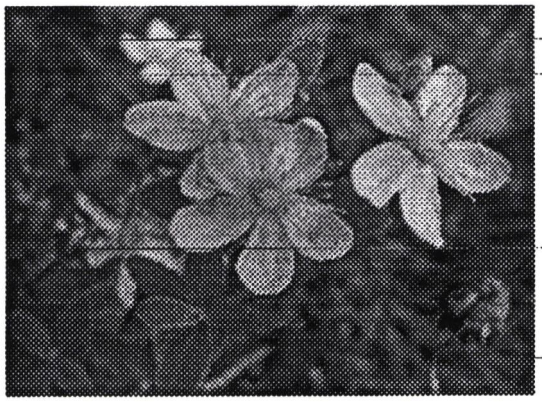
Imperforate St. John's wort
(Hypericum maculatum)
Clusiaceae, St. John's wort family

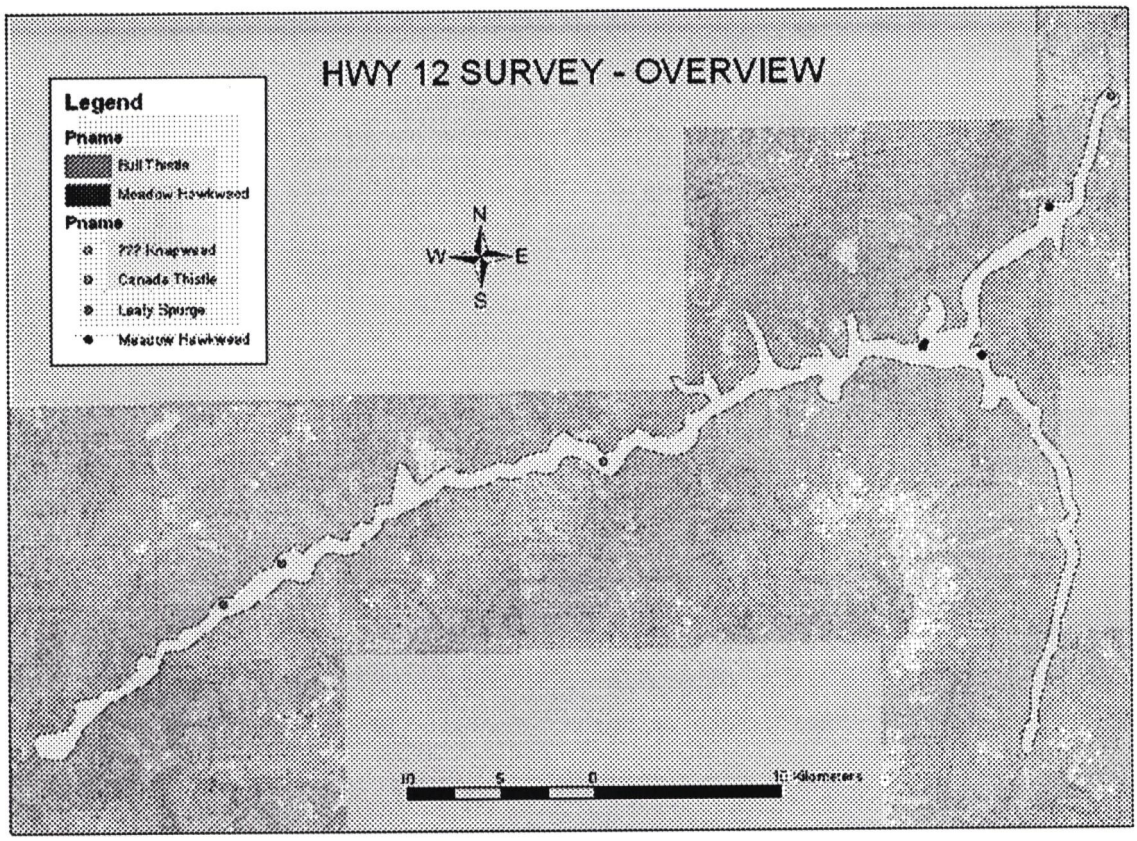
Background:
Imperforate St. John's wort was recently introduced to the U.S. from Europe. Imperforate St. John's wort is a rhizomatous perennial that is similar to common St. John's wort. Imperforate St. John's wort has stems with 4 raised lines or wings whereas common St. John's wort stems are 2 lined. Imperforate St. John's wort leaves are larger and more ovate (egg-shaped) or ovate-lanceolate (lance-shaped) with densely reticulate (net-like) venation; while leaves in common St. John's wort are ovate to linear (long and narrow with parallel sides) with obscurely reticulate venation and with numerous translucent dots. St. John's wort is invasive as well as toxic to livestock.

Description: A perennial with shoots up to three feet tall arising from a creeping rhizome; stems are square in cross-section with 4 raised lines and leaves about 3/4 inch long, without translucent glandular dots or with few large ones in the upper leaves. Flowers are bright yellow with five petals and are about 3/4 inch across. The black dots often visible along the petal margins are glands containing hypericin.

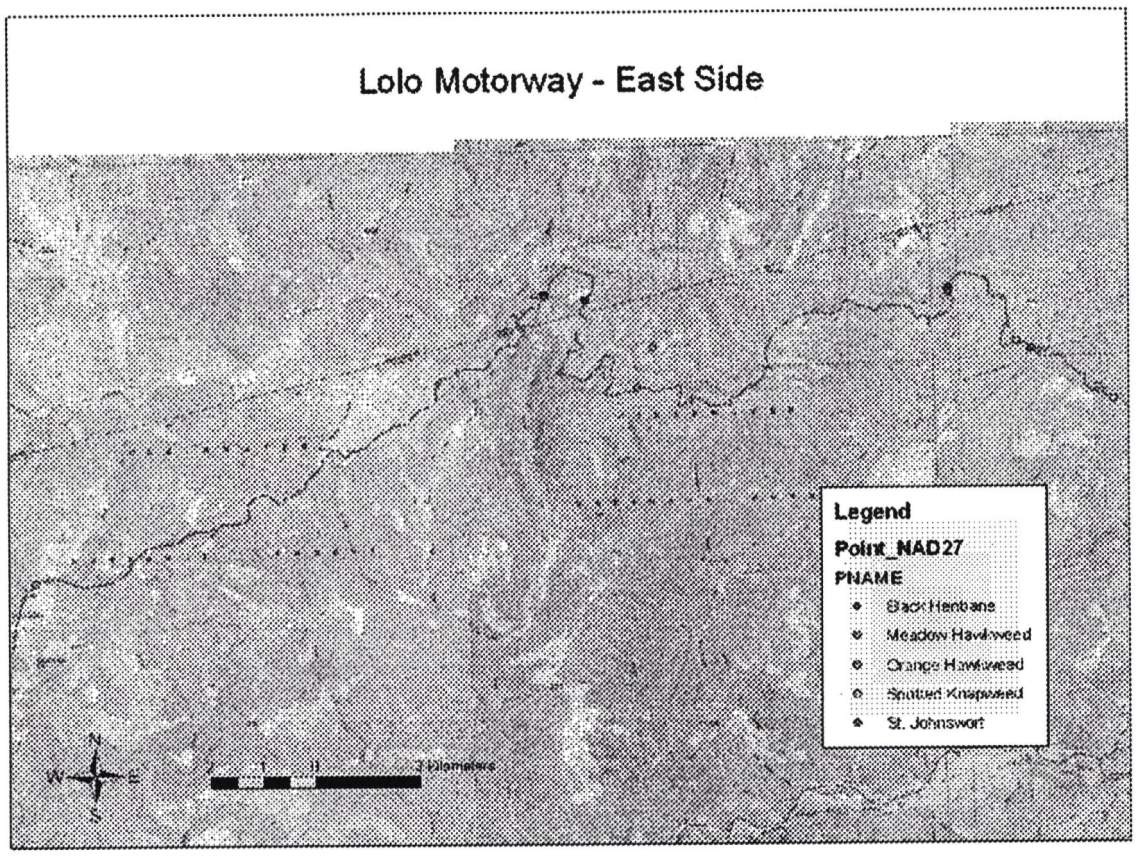
Habitat: Found in open woodland, grassland, railway and road embankments.

Distribution: A common native in Europe; in the Pacific Northwest, it has been confirmed in only one area in Bonner County, ID in 2002.

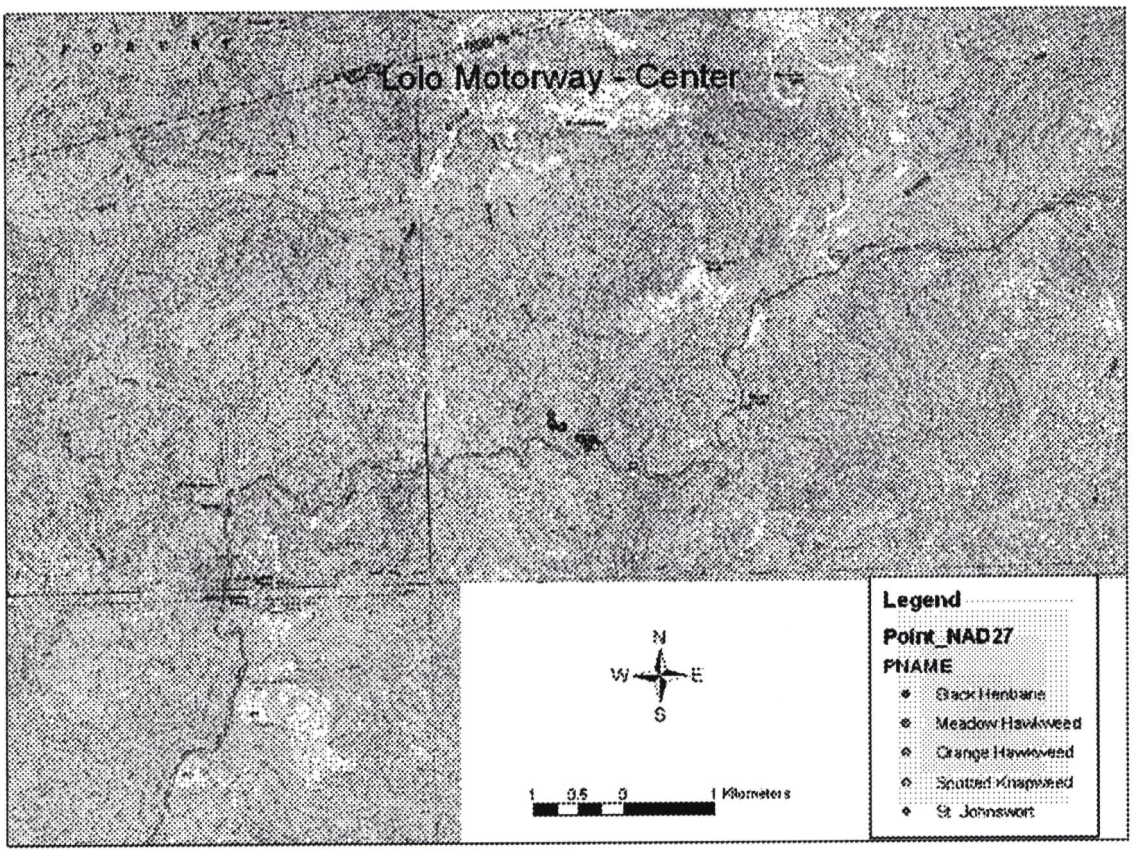




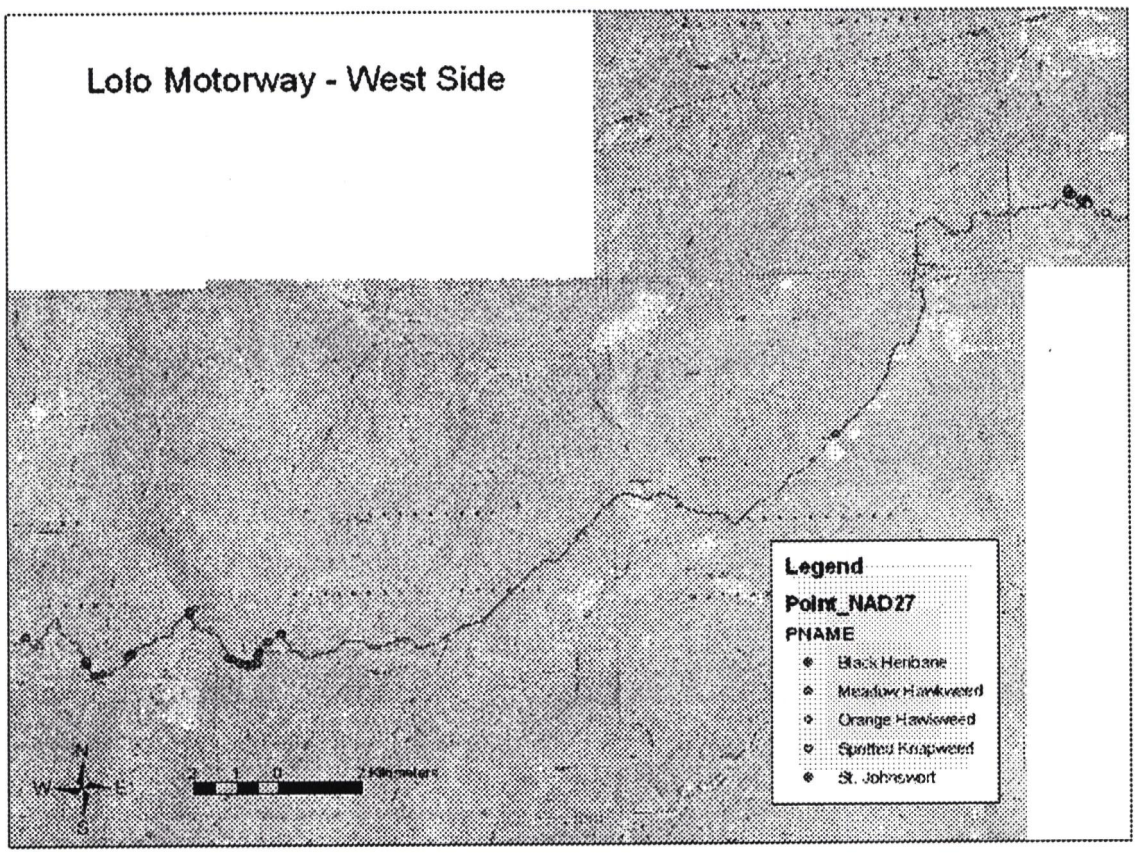
Extent of Highway 12 survey and locations of weeds along the highway corridor.



East side of the Lolo motorway and location of weeds found in the motorway.

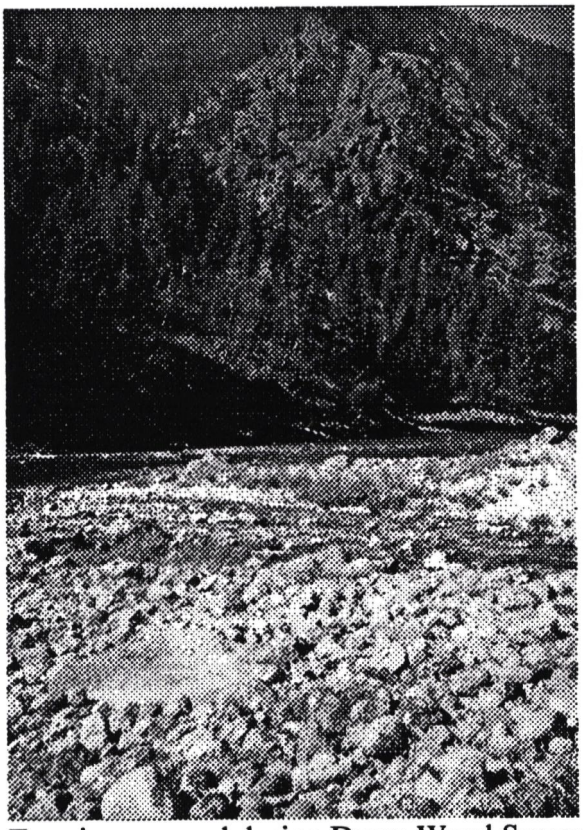


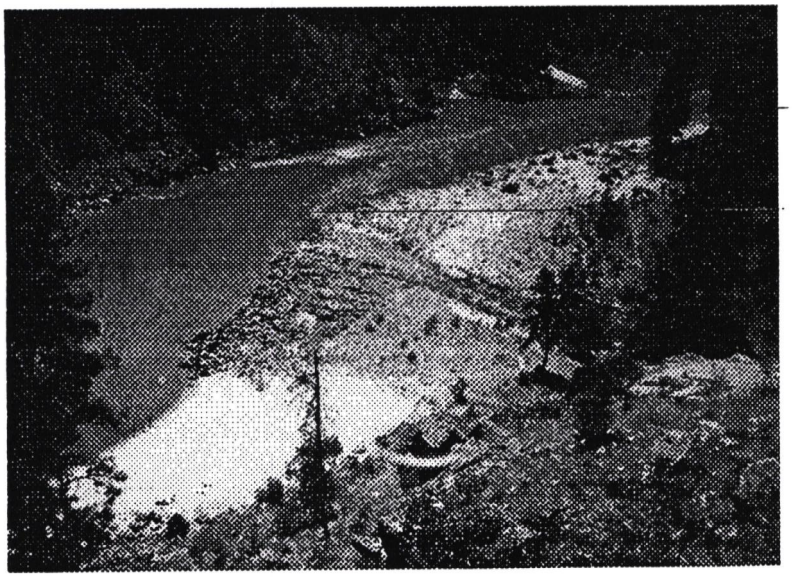
Center of the Lolo motorway and location of weeds found in the motorway.



West side of the Lolo motorway and location of weeds found in the motorway.

Survey crew at wilderness area drop off during Dyers Woad survey.





Terrain surveyed during Dyers Woad Survey.

Invasive Species Identification and Education Year End Report

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Timothy S. Prather,
Assistant Professor/Extension Specialist,
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Education

One full day workshop series was conducted at three locations. The workshop focused on hawkweed identification and management, mode of action of amino acid inhibiting herbicides, strategic planning and management of weeds before and after fire. A total of 128 people attended, mostly from Idaho but included people from Montana, Washington and Oregon. Numerous other workshops were conducted. A total of 1288 people were trained during the year's educational programs. The bulletin "Idaho's Noxious Weeds" sold over 6,000 copies in 2003.

Publications updated and produced this year include:
Matthew Schuster and Timothy Prather. 2003. Scotch Thistle. PNW Bulletin 569. 4 pg.

Prather, Timothy S., Sandra Robins and Sandy Daniel. 2003. Eurasian watermilfoil identification and management in Idaho. CIS 1108. 7 pg.

Timothy S. Prather. 2003. Idaho's Noxious Weeds 2003 Control Guide. Bul 816 (Supplement 2003).

Parker, Robert and Tim Prather. 2002. Noncropland and right-of-way vegetation control. Pacific Northwest Weed Management Handbook. pp 346-352.

Prather, Tim and Bob Parker. 2002. Weed control in pasture and rangeland. Pacific Northwest Weed Management Handbook.pp. 342-345

Web Site:
The web site called Idaho Weed Resources is now online. The site details the noxious weeds of Idaho. Additional features are still being added.

Newly reported exotic species in Idaho. Sandra S. Robins and Timothy S. Prather. (Idaho Agricultural Experiment Station, University of Idaho, Moscow, Idaho, 83844-2339). The Lambert C. Erickson Weed Diagnostic Laboratory received 289 specimens for identification in 2003. One species reported was new to the Pacific Northwest, black horehound (*Balota nigra)*. A second species was new to the state, dotted St. John's wort (*Hypericum maculatum)* and two other species were reported for only the second time in the state, rough hawkbit (*Leontodon nudicaulis)* and American pokeweed (*Phytolacca americana)*. A total of 33 counties submitted samples, up from submissions from 26 counties last year. The lab identified 37 exotic species that were new to county records

not previously documented for Idaho by the Erickson Weed Diagnostic Laboratory (see table 2).

Table 1. Identified exotic species new to the state.

County	Family	Scientific Name	Common Name
Nez Perce	Lamiaceae	*Ballota nigra*	black horehound
Bonner	Clusiaceae	*Hypericum maculatum*	dotted St. John's wort
Ada	Asteraceae	**Leontodon nudicaulis*	rough hawkbit
Nez Perce	Phytolaccaceae	**Phytolacca americana*	American pokeweed

* Second reported occurrence in Idaho

Table 2. Identified exotic species new to a county based on the Invaders database.

County	Family	Scientific Name	Common Name
Ada	Asteraceae	*Leontodon nudicaulis*	rough hawkbit
Bannock	Poaceae	*Festuca arundinacea*	tall fescue
Bear Lake	Scrophulariaceae	*Veronica arvensis*	common speedwell
Bingham	Plantaginaceae	*Plantago lanceolata*	buckhorn plantain
Bonner	Solanaceae	*Solanum rostratum*	buffalobur
Bonner	Apiaceae	*Myrrhis odorata*	sweet cicely
Bonner	Clusiaceae	*Hypericum maculatum*	dotted St. John's wort
Bonneville	Euphorbiaceae	*Euphorbia cyparissias*	cypress spurge
Butte	Solanaceae	*Nicotiana attenuata*	coyote tobacco
Caribou	Brassicaceae	*Conringia orientalis*	hare's ear mustard
Gem	Campanulaceae	*Campanula rapunculoides*	creeping bellflower
Gem	Lamiaceae	*Nepeta cataria*	catnip
Gem	Scrophulariaceae	*Veronica persica*	Persian speedwell
Gem	Asteraceae	*Senecio vulgaris*	common groundsel

Table cont.

County	Family	Scientific Name	Common Name
Gooding	Poaceae	*Digitaria ischaemum*	smooth crabgrass
Jerome	Poaceae	*Eragrostis cilianensis*	stinkgrass
Jerome	Rosaceae	*Sanguisorba minor*	small burnet
Kootenai	Poaceae	*Eragrostis pectinacea*	tufted lovegrass
Kootenai	Onagraceae	*Epilobium paniculatum*	tall annual willowweed
Kootenai	Poaceae	*Digitaria ischaemum*	smooth crabgrass
Kootenai	Caprifoliaceae	*Lonicera tatarica*	Tatarian honeysuckle
Kootenai	Thymelaeaceae	*Daphne burkwoodii*	daphne
Kootenai	Celastraceae	*Euonymus japonicus*	Japanese euonymus
Latah	Araliaceae	*Hedera helix*	English ivy
Latah	Polygonaceae	*Polygonum japonicum*	low Japanese fleeceflower
Latah	Elaeagnaceae	*Elaeagnus angustifolia*	Russian olive
Latah	Fabaceae	*Onobrychis viciifolia*	sainfoin
Lincoln	Campanulaceae	*Campanula rapunculoides*	creeping bellflower
Madison	Asteraceae	*Tanacetum vulgare*	common tansy
Nez Perce	Rubiaceae	*Galium verum*	yellow spring bedstraw
Nez Perce	Lamiaceae	*Ballota nigra*	black horehound
Nez Perce	Ranunculaceae	*Nigella damascena*	love-in-a-mist
Twin Falls	Fabaceae	*Onobrychis viciifolia*	sainfoin
Twin Falls	Euphorbiaceae	*Euphorbia myrsinites*	myrtle spurge
Twin Falls	Asteraceae	*Cirsium vulgare*	bull thistle
Twin Falls	Lamiaceae	*Lamium amplexicaule*	henbit
Valley	Rosaceae	*Potentilla recta*	sulfur cinquefoil